

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Robert C. Shaddox (Reg. No. 34,011) on May 29, 2009.

The application has been amended as follows:

*In the claims:*

18. (Currently Amended) The method of claim 1 further comprising reacting the oxidized, fluorinated CNTs with at least one diamine to form oxidized, amino-functionalized CNTs;

wherein the at least one diamine comprises a first amino group and a second amino group;

wherein the step of reacting comprises displacing the fluorine moieties and bonding first amino groups of the at least one diamine to sidewalls of the oxidized, fluorinated CNTs; and

wherein second amino groups of the at least one diamine are not bonded to sidewalls of the oxidized, fluorinated CNTs.

19. (Currently Amended) The method of claim 1, wherein the oxidized, fluorinated CNTs integrate into the CNT-epoxy composite during the curing step;

wherein integration comprises forming ester linkages between the oxidized, fluorinated CNTs and the epoxy resin;

wherein the ester linkages are formed by a reaction between the carboxylic acid groups and epoxide groups of the epoxy resin.

20. (Currently Amended) The method of claim 14, wherein the oxidized, amino-functionalized CNTs integrate into the CNT-epoxy composite during the curing step;  
wherein the at least one diamine comprises the curing agent; and  
wherein integration comprises a reaction of second amino groups of the at least one diamine with epoxide groups of the epoxy resin.

28. (Currently Amended) The method of claim 26, further comprising reacting the sidewall acyl chloride-functionalized CNTs with a diamine to form amino-functionalized CNTs;  
wherein the diamine comprises a first amino group and a second amino group;  
wherein reacting the sidewall acyl chloride-functionalized CNTs with the diamine comprises bonding first amino groups of the diamine with the sidewall acyl chloride-functionalized CNTs to form amides; and  
wherein the amides are terminated with second amino groups of the diamine.

29. (Currently Amended) The method of claim 21, wherein the sidewall carboxylic acid-functionalized CNTs integrate into the CNT-epoxy composite during the curing step;

wherein integration comprises forming ester linkages between the sidewall carboxylic acid-functionalized CNTs and the epoxy resin;

wherein the ester linkages are formed by a reaction between the carboxylic acid groups and epoxide groups of the epoxy resin.

30. (Currently Amended) The method of claim 26, wherein the sidewall acyl chloride-functionalized CNTs are-integrated into the CNT-epoxy composite during the curing step;

wherein the curing agent comprises a diamine;

wherein the diamine comprises a first amino group and a second amino group; and

wherein integration comprises a first reaction of first amino groups of the diamine with the sidewall acyl chloride-functionalized CNTs to form amides and a second reaction of second amino groups of the diamine with epoxide groups of the epoxy resin.

31. (Currently Amended) The method of claim 28, wherein the amino-functionalized CNTs are-integrated into the CNT-epoxy composite during the curing step;

wherein integration comprises a reaction of second amino groups of the diamine with epoxide groups of the epoxy resin.

56. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40, wherein the process further comprises reacting the oxidized, fluorinated CNTs with at least one diamine to form oxidized, amino-functionalized CNTs;

wherein the at least one diamine comprises a first amino group and a second amino group;

wherein the step of reacting comprises displacing the fluorine moieties and bonding first amino groups of the at least one diamine to sidewalls of the oxidized, fluorinated CNTs; and

wherein second amino groups of the at least one diamine are not bonded to sidewalls of the oxidized, fluorinated CNTs.

57. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 40, wherein the oxidized, fluorinated CNTs integrate into the CNT-epoxy polymer composite during the curing step; and

wherein integration comprises-by forming ester linkages between the oxidized, fluorinated CNTs and the epoxy resin;

wherein the ester linkages are formed by a reaction between the carboxylic acid groups and epoxide groups of the epoxy resin.

58. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 56, wherein the oxidized, fluorinated CNTs integrate into the CNT-epoxy polymer composite during the curing step;

wherein the at least one diamine comprises the curing agent;

wherein the at least one diamine comprises a first amino group and a second amino group; and

wherein integration comprises a reaction of second amino groups of the at least one diamine with epoxide groups of the epoxy resin.

62. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 61, wherein the process further comprises reacting the sidewall acyl chloride-functionalized CNTs with a diamine to form amino-functionalized CNTs;

wherein the diamine comprises a first amino group and a second amino group;

wherein reacting the sidewall acyl chloride-functionalized CNTs with the diamine comprises bonding first amino groups of the diamine with the sidewall acyl chloride-CNTs to form amides; and

wherein the amides are terminated with second amino groups of the diamine.

63. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 59, wherein the sidewall carboxylic acid-functionalized CNTs integrate into the CNT-epoxy polymer composite during the curing step;

wherein integration comprises forming ester linkages between the sidewall carboxylic acid-functionalized CNTs and the epoxy resin;

wherein the ester linkages are formed by a reaction between the carboxylic acid groups and epoxide groups of the epoxy resin.

64. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 61, wherein the sidewall acyl chloride-functionalized CNTs are-integrated into the CNT-epoxy polymer composite during the curing step;

wherein the curing agent comprises a diamine;

wherein the diamine comprises a first amino group and a second amino group; and

wherein integration comprises a first reaction of first amino groups of the diamine with the sidewall acyl chloride-functionalized CNTs to form amides and a second reaction of second amino groups of the diamine with epoxide groups of the epoxy resin.

65. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 62, wherein the amino-functionalized CNTs are-integrated into the CNT-epoxy polymer composite during the curing step;

wherein integration comprises a reaction of second amino groups of the diamine with epoxide groups of the epoxy resin.

70. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 67, wherein the fluorinated, epoxide-functionalized CNTs are integrated into the CNT-epoxy polymer composite during the curing step;

wherein the curing agent comprises at least one amine; and

wherein integration comprises a reaction between the at least one amine comprising the curing agent and epoxide groups comprising the fluorinated, epoxide-functionalized CNTs.

91. (Currently Amended) The CNT-epoxy polymer composite prepared by the process of claim 59, further comprising at least one additive selected from the group consisting of inhibitors, curing agents, viscosity modifiers, anti-degradation species, colorants, nanoparticles, nanoclays, and combinations thereof.

\* \* \* \* \*

Note: the substance of claim 91 has not been changed. Only the status identifier has changed. Specifically, the original claims featured claims 1-91, wherein claims 73-91 were withdrawn without traverse. Accordingly, claim 91 should not have been identified as (new).

## **DETAILED ACTION**

### ***Pending Claims***

Claims 1-9, 11-13, 15-40, 42-49, 51-53, 55-72, and 91-94 are pending.

### ***Response to Arguments***

1. Applicant's arguments, see pages 32-35 of the response, filed February 19, 2009, with respect to the prior art rejection of claims 14-20 & 54-58 over the combined teachings of Sandler et al., Tour et al., Stevens et al., and Chiang et al., have been fully considered and are persuasive.

- The rejection of claims 14 and 54 under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Sandler et al. (*see IDS entry no. 24*) and Tour et al. (WO 02/060812 A2) in view of Stevens et al. (*see IDS entry no. 58*) and Chiang et al. (*see IDS entry no. 52*) has been withdrawn/rendered moot by the cancellation of these claims.
- The rejection of claims 15-20 and 55-58 under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Sandler et al. (*see IDS entry no. 24*) and Tour et al. (WO 02/060812 A2) in view of Stevens et al. (*see IDS entry no. 58*) and Chiang et al. (*see IDS entry no. 52*) has been withdrawn/overcome by amendment.

Applicant has amended: the limitations of claims 10 & 14 into claim 1; and the limitations of claims 50 & 54 into claim 40.



***Response to Amendment***

2. The rejection of claim 41 under 35 U.S.C. 103(a) as being unpatentable over Sandler et al. (*see IDS entry no. 24*) in view of Tour et al. (WO 02/060812 A2) has been rendered moot by the cancellation of this claim.
3. The rejection of claims 1-9, 12, 13, 40, 42-49, 52, 53, 71, and 72 under 35 U.S.C. 103(a) as being unpatentable over Sandler et al. (*see IDS entry no. 24*) in view of Tour et al. (WO 02/060812 A2) has been overcome by amendment.
4. The rejection of claims 10 and 50 under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Sandler et al. (*see IDS entry no. 24*) and Tour et al. (WO 02/060812 A2) in view of Stevens et al. (*see IDS entry no. 58*) has been rendered moot by the cancellation of these claims.
5. The rejection of claims 11 and 51 under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Sandler et al. (*see IDS entry no. 24*) and Tour et al. (WO 02/060812 A2) in view of Stevens et al. (*see IDS entry no. 58*) has been overcome by amendment.
6. The rejection of claim 41 under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tour et al. (WO 02/060812 A1) has been rendered moot by the cancellation of this claim.
7. The rejection of claims 40, 42-49, 52, 53, and 71 under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tour et al. (WO 02/060812 A1) has been overcome by amendment.
8. The provisional rejection of claim 41 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the combined limitations of claims 16-22 of

compending Application No. 11/632,196 (US 2008/0048364) has been rendered moot by the cancellation of this claim.

9. The provisional rejection of claim 41 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the combined limitations of claims 54-68 of compending Application No. 10/561,712 (US 2007/0259994) has been rendered moot by the cancellation of this claim.

#### ***Drawings***

10. The objection to the drawings has been overcome with proper replacement sheets.

#### ***Allowable Subject Matter***

11. Claims 1-9, 11-13, 15-40, 42-49, 51-53, 55-72, and 91-94 are allowed.

#### ***Double Patenting***

12. The provisional rejection of claims 40, 42-49, 52, 53, 71, and 72 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the combined limitations of claims 16-22 of compending Application No. 11/632,196 (US 2008/0048364) has been withdrawn – *see MPEP 822.01*.

13. The provisional rejection of claims 40, 42-49, 52, 53, 71, and 72 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the combined limitations of claims 54-68 of compending Application No. 10/561,712 (US 2007/0259994) has been withdrawn – *see MPEP 822.01*.

***Communication***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is (571)272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Y. Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael J Feely/  
Primary Examiner, Art Unit 1796

June 1, 2009